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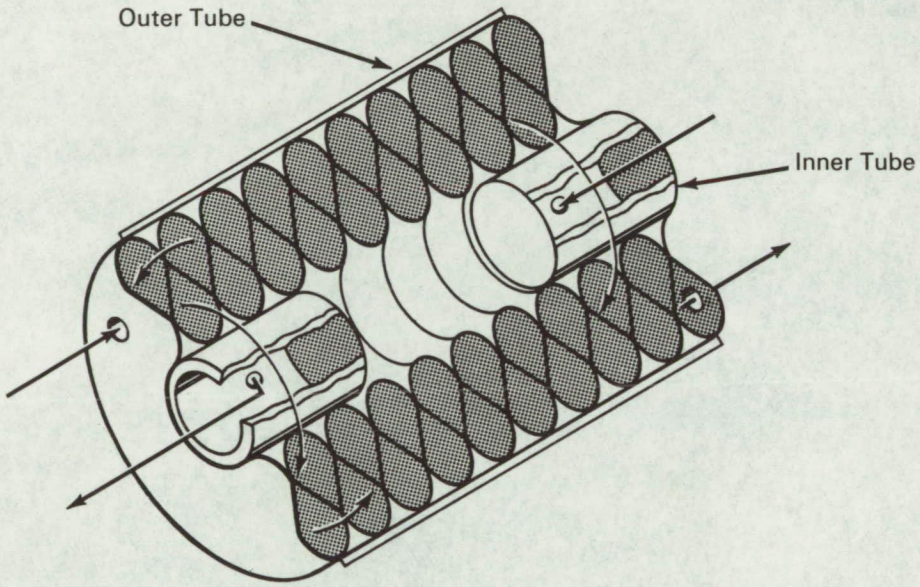
Brief 65-10291

NASA TECH BRIEF

Spiraled Channels Improve Heat Transfer Between Fluids



The problem: To increase the heat transfer surface, and therefore the rate of heat transfer, between two fluids in a countercurrent heat exchanger of given volume.

The solution: The heat exchanger is constructed by connecting a spiraled bellows-shaped ducting between two concentric cylindrical tubes. This arrangement provides adjacent, continuous spiral flow channels for the two fluids. The channel walls separating the two fluids present a much larger heat transfer surface than the concentric tubes alone.

How it's done: The bellows-shaped ducting is welded to the extremities of the smaller tube, and this assembly is pressed into the larger tube. Fluid admitted into a port at one end of the outer tube flows through one continuous spiral channel and out through a port at the other end of the outer tube. Countercurrent fluid flowing into a port at one end of the inner tube circulates through the adjacent spiral channel and out through a port at the other end of the inner tube. Heat is transferred between the fluids through the walls forming the two separate spiral channels.

Notes:

1. Although specially designed for use with gases, this heat exchanger will also prove effective for

(continued overleaf)

use with liquids wherever large pressure drops can be tolerated.

2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Jet Propulsion Laboratory
   4800 Oak Grove Drive
   Pasadena, California, 91103
   Reference: B65-10291

Patent status: NASA encourages the immediate commercial use of this invention. Inquiries about obtaining rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

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(JPL-694)